Iowa Governors STEM Advisory Council
Request for Proposals
Centers for Advanced Professional Studies (CAPS) Programs

Iowa STEM CAPS

Background

Executive Order Number 74 signed by Iowa Governor Terry E. Branstad on July 26, 2011, declared that science, technology, engineering and mathematics (STEM) education should be strengthened as part of providing a world-class education, encouraging innovation and enhancing economic development in Iowa. The Advisory Council's priorities for FY2015 include establishing innovative, replicable Iowa models of the Center for Advanced Professional Studies (CAPS) originated by Blue Valley School District in Overland Park, KS, and now occurring in four additional locations across the country, including Waukee, Iowa (see Appendix D.)

The Iowa Governor's STEM Advisory Council is interested in growing the "satellite" model occurring as Northland CAPS (http://www.northlandcaps.org/s/1625/start.aspx) that immerses students in professional environments without the need for new buildings or classrooms.

The Council has designated a portion of the state legislative funding to promote **Iowa *STEM CAPS*** programs, with the goal of uniting the expertise of public and private sectors to strengthen the continuum from school to careers. The number of proposals accepted will depend upon available funds and proposal requests.

I. Introduction

Blue Valley CAPS (BVCAPS) is a "nationally recognized, innovative high school program" created in partnership with business, business mentors, higher education, and education experts. Students become fully immersed in a professional, innovative and entrepreneurial culture, solving real world problems using industry standard tools and are mentored by real employers. The CAPS model "is an example of how business, community and public education can partner to produce personalized learning experiences that educate the needed workforce of tomorrow, especially in high skill, high demand jobs". Learning is student driven based on business and industry needs; industry professionals and teachers facilitate the learning process through problem-based projects comprised of authentic and relevant work assignments. More information about the BVCAPS program can be found here.

Iowa's STEM Advisory Council has studied various STEM school models across the country. The Iowa *STEM CAPS* model unites business and education in STEM education, allowing for the organic development of STEM programs matching local industry strengths, challenges and resources.

Three Key Attributes of Iowa STEM CAPS Model

- **Education Driven by Industry Need**
  - ✓ *Real-world industry-led and/or student-led projects that connect students to industry knowledge base*
  - ✓ *Relevant experiences driven by local need*
  - ✓ *Regional school district clusters collaborate with business and industry to maximize opportunities for students in a cost-effective model*

- **Rigorous, Relevant and Dynamic STEM Curriculum**
  - ✓ *Mastery of Iowa Core demonstrated through a competency based approach*
  - ✓ *Instructional strategies foster creativity, innovation, and the "entrepreneurial mindset" through a collaborative, interdisciplinary problem based approach*
  - ✓ *Driven by 21st Century Skills informed by current and future workforce needs*
  - ✓ *Accounts for all learners especially underrepresented populations*

- **Authentic Partnerships**
  - ✓ *STEM businesses and organizations*
  - ✓ *Government agencies*
  - ✓ *Educational institutions (Clusters of schools and/or districts are encouraged)*

Top quality proposals will describe a cohesive plan that attends to the three key attributes of Iowa STEM CAPS Model, including:

- Plan for the development of a rigorous and relevant STEM curriculum. **(Appendix A)**
- Organized, well-represented partnership team demonstrating a sustained commitment to the program through various levels of engagement **(Appendix B)**
- A plan for professional development utilizing business professionals as well as educational institutions **(Appendix C)**
- Description of CAPS alignment to current and future district goals related to STEM
- Financial Model
- Evidence of Effectiveness

II. Eligibility

All Iowa private and public school districts and buildings serving students in any of grades 9 through 12 are eligible to apply. *Clusters of schools and/or districts are encouraged.*

III. Timeframes and Selection Process

August 1, 2014: **Request for Proposal Release**
August 12, 1:00pm and

Aug. 20 at 9:00am 2014:	**Webinar for Potential Applicants-** Details will be announced at www.IowaSTEM.gov
October 15, 2014:	**Proposal Due Date**
October - November	**Proposal Review** All proposals submitted in accordance with this RFP will be reviewed by a Selection Committee appointed by the Governor's STEM Advisory Council. The committee will recommend finalists for potential site visits by November 15, 2014. (Selection committee may conduct site visits. To be determined.)
December 1, 2014:	**Award Recipients Announced** The Advisory Council will determine final awardees based upon the recommendation of the Selection Committee. The recipients will be rated according to the criteria described in this document.
Winter-Spring, 2015:	**Program Planning; Pilot implementation encouraged**
Spring/Fall 2015:	**Program Implementation** **(Recipients must fully expend the grant funds by June 30, 2015)**
Spring/Summer 2016:	**Self Assessment and Evaluation** (template to be provided)

IV. Funding

The Iowa Governor's STEM Advisory Council will provide funding support in the following areas, STEM grant funds must be fully expended in FY2015 (by June 30, 2015).

- ***CAPS Grants ~ $5,000 up to $25,000***
  - ***Curriculum Development***
    Project proposal may include costs for curriculum development working closely with business and industry partners.
  - ***District Team Site Visits***
    Proposal may include travel expenses for district teams or designees to visit one or more exemplary CAPS school model(s) to benchmark and research key criteria.
  - ***Participation in Blue Valley CAPS Summer Huddle or similar program***
  - ***Needs Assessment***
    Community surveys of students, parents, business and industry
  - ***Direct and Indirect Costs***
    Facility development, technology, liability and insurance
  - ***Professional Development (PD) for STEM teachers and partners***

Proposal may include costs to provide training in collaborating with business professional partners, in the use of project-based learning, career education and STEM professional development ***(see App. C).***

- ***Coordinator and Business Development Support***
  Project coordinator, staffing.
- ***Other unforeseen costs may be allowed subject to approval***
  Questions on budget or other aspects of this RFP may be directed to Info@IowaSTEM.gov. All questions/answers will be publicly posted at www.IowaSTEM.gov
- ***Cost sharing is required – please detail amount, source(s), and uses.***

V. Proposal Content Requirements

Format
Page Limit: 9 (does not include Cover or Commitment letters)
Single Spaced with 1-inch margins

Proposal Components:

- ✓ A singular proposal for the school or district or cluster must provide:
  - Cover Form (with each Superintendents' signatures) **Appendix F**
  - Description of community, district(s) and school(s) demographics (1 page)
  - Description of current STEM education in each school or district (1 page)
- ✓ Evidence of plan to implement elements #1-6 as described below (6 pages)
- ✓ Statement of cluster/district/school goal or vision at completion of Proposal implementation (Summer, 2016) (1 page)
- ✓ Specific Commitment Letters defining the role of... (not included in page count)
  - ____Area Business Partner(s)
  - ____Economic or Workforce Development partner
  - ____Other relevant contributors: Intermediaries, Extension, Higher Education, etc.

VI. Proposal Elements

1.	**STEM Curriculum:** Proposal demonstrates plans to create and implement an integrated business and industry driven STEM curriculum, aligned to Iowa Core, with a focus on personalized, deeper learning to students in any of grades nine through twelve. Curriculum proposal includes elements to increase participation of underrepresented groups in STEM (females, ethnic/racial minorities, students with disabilities). See **Appendix A** for specific descriptions of a STEM curriculum.
2.	**Community Partnerships:** Proposal provides evidence (including letters of commitment) of strong partnerships and collaboration with a) Public and Private Sector Business and Industry Partner(s),

	b) Economic and Workforce Development Groups, c) Higher Education Partner(s)-community college, private college, university d) Other Relevant Contributors – including Intermediaries, Extension, etc. Commitment letters clearly discuss the role(s) each partner will play. See **Appendix B** for specific descriptions of community partnerships.
3.	**Professional Development:** Documentation of team training plan, which includes commitment to engage business and education professionals in collaborative curricular and pedagogical approaches. **Professional Development must include both business partner support in working with youth, as well as educator support in linking content to industry needs.** See **Appendix C** for professional development description and **Appendix D** for resources.
4.	**Sustainability Plan:** Proposal describes *STEM CAPS* alignment to current district(s) goals and improvement efforts. Proposer should also include information about school district(s) demographics, student enrollment and demographic targets for the *STEM CAPS* program, and program leadership structure. Detail continuation of the program beyond the grant period, including willingness to function as a model for others.
5.	**Financial Model:** Proposal includes detailed budget including assurances that the school district(s) have/ has received commitments of sustained and verifiable fiscal and in-kind support from regional education and business entities. Plan should include information aligned to planning and implementation allowables as outlined in **Part IV**. Requested amount needs to be cost-efficient for the scope of work proposed.
6.	**Self Evaluation:** Proposer is responsible for evaluation in consultation with the STEM Council (a template will be provided). Final award recipients will: ● Manage project outcomes and deliverables with the support of the Advisory Council throughout the program period. ● Execute ongoing monitoring of the project implementation and work with the Governor's STEM Advisory Council. ● Collect observational and qualitative data, through such data collection activities as site visits, classroom observations, administrator and faculty interviews and student and parent focus groups. ● Provide administrative data which may include but is not limited to the following: o Student Targets ▪ Professional Skills ▪ Attendance ▪ Client feedback ▪ Feedback from internship sponsors (if opted) o Operational Targets

	▪ Enrollment ▪ Number of mentors and business partners ▪ Curriculum ▪ Budget o Customer Satisfaction Targets ▪ Students ▪ Parents ▪ Business Partners/Mentors ▪ Teachers ▪ Administrators and Counselors ▪ Other stakeholders and partners o School system impact targets ▪ Instructional changes ▪ Curriculum ▪ Assessments ▪ Attendance ▪ Student Achievement

APPENDIX A: Curriculum

Iowa STEM CAPS programs will inspire innovative, lifelong learners within interdisciplinary environments, stimulating constructive connections between their life and the real world. A robust STEM curriculum that is both relevant and dynamic and focused on personalized, deeper learning will include

- Mastery of STEM focused, business-driven academic curriculum, including integration into Iowa Core subjects
- Self-directed Learning and Competency Based Education Pathways[1]
- Reformed Instructional Strategies and Project Based Learning
- Focus on the Universal Constructs[2]:
  - Critical Thinking
  - Complex Communication
  - Creativity
  - Collaboration
  - Flexibility and Adaptability

[1] STEM Learner Readiness for Post-Secondary and Career Committee, prepared for Advisory Council, 2011.

[2] http://educateiowa.gov/index.php?option=com_content&view=article&id=2089

    - Productivity and Accountability
- Authentic Assessment
- Career and College Readiness as key outcome

Successful models of Iowa *STEM CAPS* engage business, economic and workforce development, and higher education in curriculum development through a process called rapid prototyping. This process, based off of standard industry practice, allows for multiple, quick iterations to address changing local needs. Curriculum development via rapid prototyping as well as academic strands (engineering, healthcare, entrepreneurship, etc.) provides an opportunity for public and private sector partners to engage with students through mentorship, projects, speakers, instructors, and internships.

Overall, successful STEM curriculum must be academically rigorous, inquiry and problem-based, real-world, competency-based and incorporate academic and career-related knowledge and skills.

APPENDIX B: Community Based Partnerships

The challenges faced by today's schools are numerous and complex. Effective partnerships are a proven solution to these mounting challenges and can bring relevance and rigor to students' learning environments. In order for partnerships to be successful, all stakeholders must be focused and committed. All partners must be willing to invest the time, energy and resources to learn about each other's needs, to understand the issues, and to build a trusting relationship. Partners must be willing to commit to long-term engagement and advocate for the collaboration and its desired outcomes yet be flexible to optimize efficacy.

Potential partners described here include business and industry, community college intermediaries, higher education, extension, economic and workforce development groups and chambers of commerce. In addition, a Iowa's Regional STEM Managers can be found at here.

Local and Regional Business Partners

As the U.S. Chamber of Commerce's Institute for a Competitive Workforce states, "The business community is the number one consumer of the public education system and therefore must be involved and engaged stakeholder in the education of America's children." Businesses success depends on a well-educated and adaptable pool of young talent emerging from America's high schools and colleges to maintain stability and growth. The resources, skills, and knowledge businesses and their employees bring to the table have broad significance for ensuring young adults reach their full potential. As it might be expected, there is no single framework for a school-business partnership. Partnerships between education and the business community can:

- Provide work-based learning experiences that transfer knowledge and skills between the classroom and the work setting

- Help schools build career cultures that empower students
- Help educators align curriculum to business needs
- Build meaningful relationships with mentors
- Provide tours, speakers and facilities
- Provide funding and equipment for classrooms and workspaces

Iowa *STEM CAPS* schools must build meaningful partnerships with community business partners as a mechanism to ensure career and college readiness for all of Iowa's young people. One measure of success will be an increase in the number of Iowa students who can demonstrate their qualifications on the National Career Readiness Certification[3] exam. In collaboration with the Iowa Workforce Development, the Skilled Iowa initiative seeks to promote the NCRC as an "industry-recognized, portable, evidence-based credential that certifies essential skills needed for workplace success".[4]

Economic and Workforce Development Partners

A compelling body of research links primary and secondary education to economic development and growth. The foundation of *STEM CAPS* programs is the connection between secondary education and local economic and workforce needs. Successful implementation requires districts to identify local workforce needs as a driving force for curriculum, course strands offered, program focus, etc. As workforce needs change, districts must continue to evaluate their programs to reflect these trends.

School District Clusters

To provide students with experiences and opportunities that are sustainable, school districts are encouraged to investigate a shared *STEM CAPS* program (Cluster/Hub). An example of this is the Northland CAPS program in Missouri which is a partnership of six school districts (Kearney, Liberty, North Kansas City, Park Hill, Platte County and Smithville). Collaboration across school districts fosters the sharing of best practices and a team approach to student achievement while at the same time maximizing business and community resources.

Higher Education Partners

The role of higher education in the STEM CAPS model may most prominently be in the form of articulation conversations and guidance. Post-secondary enrollment, concurrent enrollment and career academies serve both rural and urban schools. How these factor in to the CAPS experience will be an important consideration. Additionally, partnership between institutions of higher education and *STEM CAPS* programs may include exploring new strategies to strengthen ties, and to extend learning opportunities for all students. Higher Education partners may wish to extend

[3] http://skilledіowa.org/

[4] Skilled Iowa Report, 2012, Iowa Workforce Development in Partnership with ACT.

dedicated professional time (FTE) to work with the applicant district to provide professional development, curricula development, or business engagement. Direct higher education resource professionals include the Regional STEM Managers of the Governor's STEM Advisory Council who can provide access and links to higher education representatives (managers by region are found at http://www.iowastem.gov/hubs/) and the Community College Intermediaries who currently coordinate regional placements for job shadows, internships, and industry tours among other career-focused programming (a list of state-wide intermediary contacts can be found here).

APPENDIX C: Professional Development

Professional development for the *STEM CAPS* model should encourage and offer opportunities for business and education professionals to work alongside each other in an interdisciplinary, community-driven and problem-based approach. **Professional Development must include both business partner support in working with youth, as well as educator support in linking content to industry needs.**

Programs that engage educators in industry-based learning opportunities allow them to see workplace skills and how they can be integrated into real-world problem coursework will enhance professional development. Interdisciplinary teams, including business and education professionals, should work together to embed industry experiences and best practices into curriculum and pedagogy.

APPENDIX D: Resources

Additional CAPS Models
Northland CAPS http://www.northlandcaps.org/s/1625/start.aspx
Waukee CAPS http://www.waukeecaps.org/
Park City, UT CAPS http://caps.pcschools.us/
Minnetonka CAPS http://minnetonka.k12.mn.us/vantage
Professional Development Resources (this list will be expanded on the Iowa STEM CAPS website as P.D. opportunities are identified. Please send other relevant STEM CAPS supportive models to Info@IowaSTEM.gov)
Blue Valley CAPS Summer Huddle http://www.bvcaps.org/s/1403/index.aspx?sid=1403&gid=1&pgid=632
Real World Externship Program http://iowastem.gov/externships
Research Experiences for Teachers at Iowa State University http://www.cbirc.iastate.edu/education/precollege/ret/
STEMInnovator Institute at the University of Iowa http://www.jacobsoninstitute.org/stem_program_institute_2014.html

Additional Resources (this list will be expanded on the Iowa STEM CAPS website as resources are identified. Please send other relevant STEM CAPS supportive resources to Info@IowaSTEM.gov)
P-TECH High School in New York City is garnering national attention as a model partnership between business, K-12 and Higher Ed. The Iowa site visit report highlights of team learning.
"STEM Pathways to College and Career Schools, A Development Guide" is intended to help education leaders at the school and college levels, and business leaders in IT and other sectors, get started on the collaborative process of designing and building a STEM Pathways to College and Careers school (STEM-PCC school).
The Arizona Science Foundation STEM Network created The STEM Immersion Guide, which "offers a roadmap to establish project-based STEM instruction, leadership development and community support. It was created to provide practical direction that can empower teachers and administrators, schools and districts."
Business Engagement http://blogs.edweek.org/edweek/marketplacek12/Business%20Engagement%20in%20Education%20FINAL.pdf
http://www.project10.info/files/School-BusinessGuidingPrinciples.pdf

APPENDIX E: PROPOSAL SCORING RUBRIC

Phase I:

Criteria	Top Score	Comments
1) **STEM Curriculum:** Proposal contains evidence that the *STEM CAPS* program will offer a robust, integrated, business driven STEM curriculum with a focus on personalized, deeper learning to students in any of grades nine through twelve, including the recruitment of students underrepresented in STEM (females, students of ethnic or racial minority groups, and students with disabilities). The following key components are addressed: ✓ *Driven by 21st Century Skills informed by current and future workforce needs* ✓ *Mastery of Iowa Core demonstrated through a competency based approach* ✓ *Instructional strategies foster creativity and innovation through a collaborative, interdisciplinary problem based approach* *Reviewers will consider exemplary deployment of key components with a clear link to their connection with innovation and economic interest in the local area,* ***as described in Appendix A.***	25 pts	

2) **Community Partnerships:** Proposal provides evidence (including letters of commitment) of strong partnerships and collaboration that include all of the following a) Public and Private Sector Business Partner(s), b) Economic and Workforce Development Partner(s), c) A physical location amenable to ready access to business and industry professionals and facilities and, d) Other partnerships, e.g., higher education, nonprofits *Reviewers will look for genuine partnerships inclusive of key stakeholders. Evidence of enthusiastic partner commitment should be demonstrated through letters defining* ***specific, ongoing roles.*** *The partnerships should include involvement in curriculum development and instructional design including business-sponsored projects, mentoring, accelerated learning opportunities, etc.* ***as described in Appendix B****.*	25 pts	
3) **Financial Model:** Detailed Budget and assurances that the school(s) have/ has received commitments of sustained and verifiable fiscal and in-kind support from regional education and business entities. Budgeted from award date December 2014 to June 30, 2015. Request is cost-efficient for the scope of work proposed. *Rubric score will be dependent upon amount and type of in-kind and financial support from regional industry and educational partners*.	15 pts	
4) **Sustainability Plan:** Proposal clearly aligns *STEM CAPS* program to district goals and demonstrates commitment to involve underrepresented populations.	15 pts	
5) **Professional Development:** Documentation of a training plan which	10 pts	

prepares business and education professionals to implement *STEM CAPS* program. *Top points awarded for proposals which include evidence of strong industry professional/teacher engagement and commitment to an integrated STEM curriculum as described in Appendix A.*		
6) **Self Evaluation:** Proposal ensures a competent, comprehensive internal program evaluation, both qualitative and quantitative, in cooperation with Council. *Top points awarded to proposals that give clear assurance of capacity and expertise to evaluate, in cooperation with the STEM Advisory Council evaluation process.*	10 pts	

APPENDIX F: COVER FORM

School(s) or District(s) _____

District Superintendent(s) _____

Project Director _____

Lead Contact Information (Project Director unless stated otherwise)
Address: _____
Phone: _____
Email: _____

Statements (to be initialed by each District Superintendent)

_____I agree to a Selection Committee site visit as a component of the two-part Review Process. Members of the selection committee may conduct site tours, interview relevant school and community leaders, or observe brief proposal presentations by students and staff.

_____If selected, the school(s) agree to conduct, in consultation with the STEM Council, a thorough evaluation throughout the term of the program. The evaluation will abide by a template provided by the Council.

Items Included in Proposal:

____Cover Form
____Proposal (limit 9 pages not including Cover or Commitment letters)
____Additional Supporting Documents

Please address questions to

Info@IowaSTEM.gov (all questions/answers will be posted at www.IowaSTEM.gov)

Key personnel: The IOWA STEM CAPS Taskforce is chaired by Southeast Regional Manager Kristine Bullock at **Kristine-Bullock@uiowa.edu**. STEM Council Executive Director Dr. Jeff Weld at **Weld@iowastem.gov**

Submit Proposal by October 15, 2014, 5:00pm to Info@IowaSTEM.gov

Or, deliver on a Windows-compatible electronic memory device to

Executive Director Jeff Weld, PhD.
Iowa Governor's STEM Advisory Council
214 East Bartlett Hall, University of Northern Iowa
Cedar Falls, IA 50614-0298